



Plane May Revolutionize Telecom, Disaster Relief

By Nigel Hunt

LOS ANGELES (Reuters) _ Scientists are developing a plane that looks set to fly higher than any aircraft has flown before and stay up in the air for months, revolutionizing a wide range of fields from telecommunications to disaster relief.

``We look at this as the beginning of a new era, almost like the Wright Brothers in 1903. I am sure they were pretty excited and we are too," said John Del Frate, a National Aeronautics and Space Administration scientist in California.

The pilotless plane named Helios will be powered by solar cells during the day; at night a new energy storage system that includes fuel cells will take over. NASA's initial target is a 96-hour nonstop flight in 2003 but eventually it is expected to remain in the air for six months at a time, Del Frate said.

The plane has already been built by NASA's partner, Monrovia, California-based technology company AeroVironment, and has made daytime flights powered by solar cells.

But the key breakthrough will come when the new storage system is added, allowing it stay in the air for months. Long flight duration could open up an array of applications, with telecommunications seen as the main economic driving force.

'Very Large Participant in Telecommunications'

``It won't replace other technologies wholesale but I think it will become a very large participant in telecommunications," said AeroVironment president and chief executive officer Timothy Conver. General Motors Corp. owns a less than 15 percent stake in privately held AeroVironment.

Conver said the planes could be based above major urban population centers such as Los Angeles and each plane could provide the equivalent of around 2,000 high-speed lines for Internet users in an area about 40 miles (65 km) in diameter.

He said the cost per bit of data is likely to be about 1/20 that of a low-orbit satellite and he also expected it to be cheaper than terrestrial systems. ``There is a huge, compelling economic case because there is so much more capacity in one area (when compared with a low-orbit satellite)," he said.

The plane now costs ``a few million bucks" to build, Conver said, but that should come down over time as technological advances and economies of scale drive down key costs, including its 6,000 solar energy cells.

The prototype has a wingspan of 250 feet (76 metres), which is longer than a Boeing 747, but it weighs less than 2,000 pounds (900 kg). It takes off at less than 30 miles (50 km) per hour and at altitude flies at less than 100 mph (160 kph).

Conver said prototypes have flown at 80,000 feet (24,380 metres), higher than any other propeller aircraft, and there are plans for them to fly at more than 100,000 feet (30,480 metres), believed to be higher than any plane has flown.

All records now are held by Lockheed's SR71 spy plane, but information related to that aircraft remains classified.

For technological reasons the plane will probably operate best at around 65,000 feet (19,810 metres), Conver said.

Turning Reflections into Power

Richard Swanson, president and chief executive officer of Sunnyvale, California-based SunPower Corp., which makes the plane's solar energy cells, said the transparency of the wings allows the cells not only to absorb sunlight from above but also to turn reflections off clouds below into power.

Del Frate said NASA had been interested for some time in the development of a plane with "ultra-long" flight duration that could carry its scientific instruments.

He said the new plane could fly year-round in 2003 or 2004 around the equator, with the line moving gradually north as technological advances are made, possibly to U.S. South in 2005 and a city such as New York between 2008 and 2010.

Shorter days and a lower sun angle during the winter may initially limit its year-round ability to fly for extended periods further north, he added.

Del Frate is a project manager for NASA's Environmental Research Aircraft Sensor Technology (ERAST) and is based at the Dryden Flight Research Center at Edwards Air Force base in the southern California desert. He said the plane would be of great use in disaster relief, noting that if a major earthquake, for example, were to hit southern California it could not only provide imagery of the damage but also serve as a telecommunications platform, restoring lost communications within 24 hours.

"Disaster organizations could distribute thousands of cell phones. It (the plane) would provide a ready-to-plug-up cell phone system," he said.

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